

THE MINERAL INDUSTRIES OF CENTRAL EUROPE

CZECH REPUBLIC, HUNGARY, POLAND, AND SLOVAKIA

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The Central European transitional economy countries of the Czech Republic, Hungary, Poland, and Slovakia represent one of the more economically dynamic regions of the former centrally planned economy countries of Europe and Central Eurasia. As founding members of the Central European Free Trade Agreement (Bulgaria, Romania, and Slovenia joined in 1999), these countries have generally continued to implement policies designed to harmonize standards and trade with a view to integrate themselves fully into the European Union (EU) to which they acceded in 2004. They had previously integrated themselves in the European security sphere through membership in the North Atlantic Treaty Organization. To accommodate EU standards, the development of new commercial infrastructure in the region has added special importance to the region's cement and steel industries; major consumption increases of these commodities serve as markers for likely consumption increases of base metals and many other mineral commodity groups. The trend toward large-scale foreign investment in the cement and associated quarrying industries in the Central European region that emerged during the 1990s became discernible more clearly in the region's iron and steel sectors during 2003 and continued to a lesser extent in 2004. The denationalization of the iron and steel sectors was among the major issues in the Central European region. On balance, however, mining continued to undergo rationalization to meet market economy norms and had a much reduced share of industrial production and gross domestic product than it had during the years of central economic planning when Government policies dictated mineral self-sufficiency at all costs.

CZECH REPUBLIC

The Czech Republic was an important Central European producer of heavy industrial goods manufactured by the country's chemical, machine building, and toolmaking industries. Steelmaking, the mining and processing of industrial minerals, and the production of construction materials continued to be of domestic and regional importance.

In 2004, the Czech Republic's gross domestic product (GDP) based on purchasing power parity increased by about 3.8% compared with that of 2003 (International Monetary Fund, 2004¹). Industrial production increased by about 4.7% (U.S. Central Intelligence Agency, 2005, p. 250). In 2004, the privatization of the iron and steel sector continued to be a dominant issue in the country's mineral industry.

Government Policies and Programs

The Government continued policies of economic development that were aimed at integrating the country into the European Union (EU). The country's membership in the International Monetary Fund, the Organisation for Economic Co-operation and Development (OECD), the World Bank for Reconstruction and Development, and the World Trade Organization, as well as participation in the General Agreement on Tariffs and Trade was largely an outcome of the Czech Republic's full orientation toward a Western European political system and market economy.

Three constituent acts comprise the country's mining law, which forms the foundation of the Government's mining and other mineral-related policies. These are Act No. 44/1988 Coll., on Protection and Use of Mineral Resources (the Mining Act), as amended; the Czech National Council Act No. 61/1988 Coll., on Mining Activity, Explosives, and State Mining Administration (Authority/Sedenka), as amended; and the Czech National Council Act No. 62/1988 Coll., on Geological Works, as amended. The Mining Act classifies minerals into either "reserved" and "unreserved" categories. The "reserved" category refers to mineral deposits that, apart from immediate market considerations, are determined to be necessary for the development of the national economy (Luks, 1997; GEOFOND, 2004, p. 10, 11). Other provisions in the Mining Act address issues of licensing and Federal and regional compliance with environmental regulations during the exploration and exploitation of mineral deposits and the reclamation of mined-out areas.

To meet the needs of a developing market economy, major changes in the Czech Republic's environmental policies were enacted in 1997. On the basis of environmental principles that were approved by the Government in 1995, the new policies were officially formulated in the environmental law of 1997, Act No. 125/1997. Also, four of the six enabling provisions of the new law were formally adopted at the same time as the new law on January 1, 1998. The environmental law focuses on reducing the volume of waste, on the discreet collection of waste by category, and on recycling. The law adopts the main provision of EU and OECD regulations and the Basel Convention. The catalog of wastes is compatible with the European Catalogue of Wastes of the EU.

¹References that include a section mark (§) are found in the Internet Reference Cited sections.

Production and Trade

In 2004, the iron and steel industry constituted the major part of the country's metallurgical sector. The output of pig iron increased by 3.6% compared with that of 2003. Crude steel increased by 3.4% (table 1).

According to trade data for 2003, Russia and Ukraine were the main exporters of iron ore and pig iron to the Czech Republic. Net imports of pig iron amounted to about 22,000 metric tons (t), which was a decline of about 75% compared with those of 2002. Net exports of iron and steel scrap amounted to 673,000 t, which was about 2% less than those of 2002 (GEOFOND, 2004, p. 24).

In 2004, the production of mineral fuels registered mixed results. The production of brown coal and lignite declined by about 4% compared with that of 2003; bituminous coal output increased by about 9.5% to about 14.6 million metric tons (Mt). Natural gas production increased by about 34% compared with that of 2003; crude petroleum declined by about 4%. The Czech Republic remained a net exporter of all forms of coal and continued to rely on imports of natural gas and petroleum to meet almost all its requirements. In 2003, total imports of petroleum amounted to about 6.3 Mt, which was a 4.3% increase compared with that of 2002 and about 68% of the Czech Republic's total petroleum imports. Russia also accounted for more than 74% of the Czech Republic's imports of natural gas, which in 2003 declined by almost 3% compared with those of 2002 and amounted to about 6,772 million cubic meters (GEOFOND, 2004, p. 71, 77, 80, 83, 89).

Major production changes in the industrial minerals sector included production increases of cement and feldspar and production downturns for diatomite, graphite, and gypsum (table 1).

Commodity Review

Metals

The Czech Republic's metals sector produced a broad range of base metals and semimanufactures from imported primary raw materials (ores and concentrates) and secondary materials (scrap). Although interest in gold mining continued in some parts of the Czech Republic, other metals were reported to have been depleted. According to official data, most of the country's metallic mineral deposits as of December 31, 2000, were not economic. Only small deposits of tin-tungsten ore remained on the official register of economic deposits; these deposits were to be removed from the register in the near term (GEOFOND, 2005, p. 23).

All the raw materials consumed by the country's steel industry—iron ore and concentrate, and pellets and agglomerate—were imported. In 2003, more than 8.2 Mt of iron ore and concentrate was imported, mainly from Ukraine and the Russian Federation, which accounted for about 64% and 30%, respectively, of the total imports. Net imports of pig iron amounted to about 22,000 t. Russia and Slovakia accounted for 94% of the total imports of pig iron by the Czech Republic (72,000 t); net exports of iron and steel scrap by the Czech Republic amounted to about 673,000 t (GEOFOND, 2004, p. 24).

The steel industry operated eight steel plants with a collective capacity to produce almost 11 million metric tons per year (Mt/yr) of steel. The main steel producers were, in order of crude steel production capacity, Nova Hut s.p. Ostrava (NH), Zelezarne Vitkovice (ZV), Trinecke Zelezarny (TZ), and Poldi United Steel Works and accounted for more than 87% of the country's total crude steel production capacity.

The rationalization of the iron and steel industry and the increasing foreign investor interest in Czech ferrous metallurgy continued in 2004. At yearend 2004, LNM Holdings Ltd. (LNM) of the United Kingdom, which had acquired NH in January 2003, announced plans to rationalize NH. These plans included a workforce reduction of 3,500 employees by the end of 2005 (Metal Bulletin, 2004).

Industrial Minerals

The Czech Republic was well endowed with and produced a broad range of industrial minerals that met most domestic construction and chemical industry requirements, as well as those for export. According to assessments made by the Czech Geological Survey, the availability of these minerals at the recent (2000 to 2004) average rate of mining ranged from about 43 years for gem-grade pyrope ore to about 3,000 years for silica raw materials. Such corrective additives as clays, loams, loess, sands and shales needed by the country's cement industry to regulate the content aluminum (Al_2O_3), iron (Fe_2O_3), and silicon oxides (SiO_2) during clinker production were reported to have a combined mining life of about 1,380 years. Limestone, kaolin, and glass sand, in order of deposit sizes, were industrial minerals that had the largest resources suitable for exploitation (GEOFOND, 2004, p. 92-93).

During the late 1990s, foreign investment in the Czech Republic's mineral industry focused primarily on the acquisition of cement plants and associated raw materials quarries.

Mineral Fuels

The energy policy of the Czech Republic has promoted the following aims: decontrol of energy prices; denationalization, rationalization, and restructuring of the energy sector; increase in the level of conservation, health and safety, and pollution controls in the energy sector; diversification of electricity, natural gas, and petroleum supply; and the raising of the efficiency of domestic fossil fuel production. To help make its governmental and economic structures more compatible with those of the EU, the Government will proceed with harmonizing the country's energy sector's standards with those of the EU.

Coal.—Bituminous or hard coal occurs mainly in the Upper Silesian Basin. Of the resources in this region, only about 15% is in the Czech Republic; the balance of the resources is in Poland. As of December 31, 2003, the Czech Republic reported that the total resource of bituminous coal amounted to about 16.1 billion metric tons (Gt). In 2004, the production of bituminous coal rose by about

9.5% compared with that of 2003. In 2003, imports amounted to 1.281 Mt and were derived almost exclusively from Poland (94%). About 5.7 Mt of bituminous coal was exported mainly to Austria, Germany, and Slovakia (GEOFOND, 2004, p. 70, 71).

In addition to bituminous coal, the Czech Republic distinguishes two types of lower rank coal—brown coal and lignite. The Czech Republic's brown coal deposits are worked in the northwestern part of the country in the Bohemian brown coal basins. The major brown coal basins are found in the Krusne hory Mountains region and cover an area of 1,900 square kilometers (km²). Coal also is mined in the Cheb, the Sokolov, and the Zitava basins. As of December 31, 2003, total resources of brown coal were reported to be more than 9.5 Gt. Brown coal was used mainly as a fuel in the country's electric power industry; a minor amount was consumed by the chemicals sector. In 2003, major foreign commerce in brown coal centered on exports of about 1.3 Mt; Slovakia (63%) and Hungary (22%) were the major recipients (GEOFOND, 2004, p. 76, 77). According to GEOFOND (2004, p. 79), Czech standards for coal describe high-volatile lignite as a variety of brown coal that has undergone the least amount of coalification and still has xylitic characteristics (fragments of wood, preserved tree trunks, etc.). Its dry calorific value is less than 17 megajoules per kilogram. The boundary between brown coal and high-volatile lignite is not distinct. Lignite, which usually was consumed by the electric-power-generating sector, also was used for heating. The chief deposits occur in the Vienna Basin, which extends from Austria to Moravia. Total resources of lignite in the Czech Republic at the end of 2003 amounted to about 1.012 Gt (GEOFOND, 2004, p. 80).

Natural Gas and Petroleum.—The Czech Republic's petroleum resources as of December 31, 2003, amounted to about 32.4 Mt, of which about 12.5 Mt was categorized as economic proven; 8.6 Mt as economic probable; and about 11.4 Mt as subeconomic (GEOFOND, 2004, p. 82, 83).

In 2003, the Czech Republic imported about 6.3 Mt of petroleum, of which about 68% (4.3 Mt) was imported from the Russian Federation and 15.8% (1 Mt) came from Azerbaijan. Exports during the same period were about 133,000 t (GEOFOND, 2004, p. 82, 83). In 2003, domestic production of crude oil increased by about 23% compared with that of 2002. Petroleum production amounted to about 4.3% of net imports.

In 2004, natural gas production increased by about 34% to 175 million cubic meters from 131 million cubic meters produced in 2003. In 2003, the Russian Federation supplied the Czech Republic with about 74% of approximately 6.8 billion cubic meters of natural gas imports; about 26% was obtained from Norway (GEOFOND, 2004, p. 89, 90).

Outlook

The Czech Republic will continue to rely on imports of natural gas and petroleum, given the country's limited resources of these commodities. Import reliance on base and precious metals also will continue, although demand is not expected to increase significantly. Owing to the increasingly high technological level of the Czech Republic's fabrication and service sectors, material input per unit of output is expected to continue to decline from high level of material input that was the norm in production during the country's central economic planning period.

References Cited

- GEOFOND, 2004, Mineral Commodity Summaries of the Czech Republic: Prague, Czech Republic, Ministry of the Environment of the Czech Republic, June, 210 p.
- GEOFOND, 2005, Mineral Commodity Summaries of the Czech Republic: Prague, Czech Republic, Ministry of the Environment of the Czech Republic, June, 268 p.
- Luks, Josef, 1997, Current mining law in the Czech Republic: Czech Business and Trade, no. 11, p. 35, 36.
- Metal Bulletin, 2004, [Untitled]: Metal Bulletin, no. 8871, December 6, p. 24.
- U.S. Central Intelligence Agency, 2005, Czech Republic, in *The world factbook*: Washington, DC, U.S. Central Intelligence Agency, 698 p.

Internet Reference Cited

- International Monetary Fund, 2004 (September), Czech Republic, World Economic Outlook Database, accessed January 27, 2006, via URL <http://www.imf.org/external/pubs/ft/weo/2004/62/data/dbgim.cfm>.

HUNGARY

Bauxite remained the only major nonfuel mineral produced in Hungary that was significant in terms of European mineral production. In 2004, Hungary maintained production of modest amounts of fossil fuels, industrial minerals, and metals. Despite substantial production of bauxite and alumina, Hungary's production of primary aluminum remained modest owing to limited domestic sources of energy. The production of coal, natural gas, and petroleum was sufficient to satisfy only about one-half of the country's annual energy needs.

In 2004, Hungary's gross domestic product based on purchasing power parity increased by about 4.7% compared with that of 2003 (International Monetary Fund, 2004, p. 199). The gross output (value) of industry rose by about 9.6% (U.S. Central Intelligence Agency, 2005, p. 250).

Government Policies and Programs

The Government based its regulatory policies for mining and geologic survey work on provisions in the Mining Law of 1993 (Act XLVIII). Section 50 of the Mining Law was the basis for Governmental Decree No. 132/1993, which constitutes the legislative underpinning for the Hungarian Geological Survey. The Mining Law and related decrees and codes established the legislative bases

for estimating reserves, determining environmental risks associated with mining, and providing the geologic and technical information needed to outline tender conditions.

Government agencies that were responsible for enforcing existing environmental protection laws and regulations included the Ministry of the Environment and Regional Planning (KTM) and the Hungarian Mining Office (MBH). The KTM was authorized to help only in the enforcement of existing environmental legislation prescribed by other ministries of the Government. With respect to mining and minerals, Hungary's Ministry of Industry and Commerce had the primary responsibility for establishing environmental regulatory standards. The chief responsibility of the MBH was that of a certifying agency; it was mandated only to review technical development and operational plans. These plans were required to include provisions for environmental protection and land restoration by the responsible entities.

Production and Trade

In 2004, the output of bauxite declined by about 3% compared with that of 2003. The production of crude steel decreased by about 1.3%, and that of rolled semimanufactures, by about less than 1% compared with respective production levels in 2003; all iron ores and concentrates consumed by the country's iron and steel sector were imported. Among industrial minerals, the production of cement in 2004 remained at about the output level of 2003. Total coal output rose slightly (0.3%) compared with that of 2003 (table 3). Hungary's output of fossil fuels and industrial minerals was modest.

Hungary's overall foreign trade trend reflected a steady increase of transactions with member countries of the European Union (EU), which Hungary joined in 2004. The value of Hungary's imports from the EU in 2003 increased by more than fivefold compared with those of 1993; there was a steady increase in the value of imports each year during this period. During the 1993-2003 period, the value of Hungary's exports to the EU increased by more than sevenfold. In 2003, the value of total imports from the EU accounted for about 55% of total imports compared with 40% in 1993. Hungary's exports to the EU in 2002 accounted for 74% of total exports in contrast to 46% in 1993 (Hungarian Central Statistical Office, 2004, p. 324).

To meet the needs of its economy, the country relied heavily on imported mineral raw materials. In 2004, the value of imports of industrial mineral products rose by 13% compared with that of 2003. The value of exports of industrial mineral products, however, declined by slightly. With respect to mineral fuels, the total value of imports was about four times greater than the value of exports; imports of natural and manufactured gas declined by about 5%; imports of coal and coal products, and petroleum and refinery products increased by about 38%, and 17%, respectively. In 2004, imports such mineral fuels as natural gas and petroleum from Russia, in terms of value, amounted to 62% of total imports. The value of natural gas exports rose by more than 19%; export values of coal and petroleum and petroleum refinery products rose by about 58% and by 36%, respectively, compared with those in 2003 (Hungarian Central Statistical Office, 2005, p. 342-343). These increases in exports of energy carriers may reflect some reexports of mineral fuel commodities originating in Russia and other producers in the Commonwealth of Independent States. Import and export values of iron and steel increased by about 33%, respectively, compared with those of 2003. Similarly, imports and exports of nonferrous metals increased by about 37% and 11%, respectively, compared with those of 2003 (Hungarian Central Statistical Office, 2005, p. 342).

Commodity Review

Metals

Bauxite mining and refining to alumina and manganese mining (manganese carbonate and oxide ores mined at Urkut) remained the only major metal mining and processing operations in Hungary. Gallium was produced as a byproduct of alumina refining.

Bauxite and Alumina and Aluminum.—Bakonyi Bauxitbánya Kft. (Bakony Bauxite Mines Ltd.), a subsidiary of Magyar Aluminium Ltd. (MAL), mined bauxite in the Bakony District; Hungary's total resources of bauxite as of December 31 2003, were estimated to be about 39 million metric tons (Mt) with a range from 47% to 52% Al_2O_3 , 6% to 8% SiO_2 , and 20% to 25% Fe_2O_3 . About one-third of the bauxite was mined by open pit methods; the balance was mined underground (Fenyőfo and Halimba Mines). In 2004, bauxite production declined by almost 3% compared with that of 2003 owing mainly to the closure of the Halimba III Mine (table 1) (Magyar Aluminium Ltd., 2004, p. 6; Fodor and Kakas, 2005, p. 5). The Halimba II bauxite mine, which was put into operation in 2003, was designed to account for about one-third of the bauxite feedstock needed by domestic alumina refiners through 2009. To assure continued supplies of bauxite to its alumina refineries, MAL acquired ownership of three bauxite mines, which had been owned formerly by Rudnici Boksita Jajce d.d., in neighboring Bosnia and Herzegovina. In recent years, MAL has been the sole customer at the three Bosnian mines (Magyar Aluminium Ltd., 2004, p. 4).

Iron and Steel.—In Hungary in 2004, as in the other Central European countries, acquisitions and mergers in the steel sector increased, reflecting the Government's program to accommodate standards and practices that would ease Hungary's entry into the European Union (EU). The privatization of Dunaferr Dunai Vasmű Rt., which was Hungary's leading integrated steel producer, and Dam-Diosgyori Acélmuvek és Kereskedelmi Kft (Dam Steel) continued to be hampered by debts accumulated by the steelworks (Metal Bulletin, 2004a, b).

Manganese.—In 2004, the output of mainly manganese carbonate ore by the Urkut Mine in the Bakony Mountains amounted to about 42,000 t, which was about 12% less than that produced in 2003. Hungary's manganese ore was used to produce mainly blast furnace ferromanganese (table 3).

Industrial Minerals

Hungary produced a broad range of industrial minerals that included aggregates, bentonite, kaolin, and perlite. Such industrial minerals as construction aggregates and cement continued to play an important role in Hungary's economy, especially in the modernization of the country's infrastructure. Highway construction planned through 2008 would continue to be an important element in the country's development of infrastructure.

Mineral Fuels

Domestically produced coal, natural gas, and petroleum have accounted for 40% of Hungary's energy needs. In 2004, Hungary produced about 1.1 million metric tons per year of crude petroleum from reserves that amounted to about 22 Mt; most petroleum (9 Mt), however, was imported from Russia via the Friendship pipeline (Fodor and Kakas, 2005). Similarly, a substantial and increasing amount of natural gas was being imported from Russia through Russia's gas-main network (Molnar, 2003).

Hungary classifies its coals into three categories—hard coal (bituminous), brown coal, and lignite. Brown coal and lignite were mined, for the most part, to fuel the country's thermal electric power stations. Lignite was mined by open pit at the Bukkabrany and the Visonta Mines; the output from these mines was used entirely at the Matra electric powerplant. In 2004, the output of lignite rose slightly (0.4%) compared with that of 2003; the output levels of bituminous coal and brown coal remained virtually the same as those in 2003. Resources of lignite and brown coal and bituminous coal as of January 1, 2003, amounted to about 3,100 Mt and 197 Mt, respectively (Fodor and Kakas, 2005).

Outlook

Hungary will continue to rely on imports of natural gas and petroleum and most metals. The need to develop modern infrastructure that conforms to EU standards was expected to stimulate an increase in the consumption of construction-related industrial minerals and base metals.

References Cited

- Fodor, Bela, and Kakas, Kristof, 2005, Hungary, *in* Mining annual review: London, United Kingdom, Mining Communications Ltd., 7 p.
- Hungarian Central Statistical Office, 2004, Statistical yearbook of Hungary 2003: Budapest, Hungary, Hungarian Central Statistical Office, 610 p.
- Hungarian Central Statistical Office, 2005, Statistical yearbook of Hungary 2004: Budapest, Hungary, Hungarian Central Statistical Office, 626 p.
- International Monetary Fund, 2004, Hungary, *in* World economic outlook database: Washington, DC, International Monetary Fund, September, 276 p.
- Magyar Aluminium Ltd., 2004, Magyar Aluminium 2003 annual report: Budapest, Hungary, Magyar Aluminium Ltd., 30 p.
- Metal Bulletin, 2004a, Debt issue remains a snag in Dunaferri sale: Metal Bulletin, no. 8855, August 16, p. 22.
- Metal Bulletin, 2004b, Hungary makes renewed bid to sell off Dam Steel: Metal Bulletin, no. 8848, June 8, p. 17.
- Molnar, Jozsef, 2003, Hungary, *in* Mining annual review: London, United Kingdom, Mining Journal Ltd., 4 p.
- U.S. Central Intelligence Agency, 2005, Hungary, *in* The world factbook: U.S. Central Intelligence Agency, 698 p.

POLAND

Poland was endowed with significant mineral resources, which included bituminous coal, copper and lead-zinc ores, salt, silver, and sulfur. In 2004, the country's reserve base of copper amounted to more than 5% of the world total; that of elemental sulfur (2004) represented about 9% of the total (Ober, 2005; Edelstein, 2006). Resources of coal and salt were considered to be of world significance and those of silver, lead, and zinc amounted to about 25%, 4%, and 2%, respectively (Ney and Smakowski, 2004, p. 236, 503; Gabby, 2005; Hilliard, 2005; Plachy, 2005). The latest available inventory of the country's mineral resources (for 2003) indicated net gains in geologically documented resources, mainly for gravel aggregates, natural gas, and petroleum (table 7).

In 2004, after Russia, Poland remained the leading producer of copper in Europe and Central Eurasia and remained among the top 10 world mine producers of copper (Edelstein, 2006). Poland also continued to be among the leading world producers of nitrogen (in ammonia), salt, silver, and sulfur. In Europe and Central Eurasia, the country was a significant producer of lead and zinc and a leading producer of lime. According to the most recent data available (2003), Poland accounted for about 3.0% of total world output of bituminous coal (Główny Urząd Statystyczny, 2005a, p. 541, 542).

According to the International Monetary Fund, Poland's gross domestic product (GDP) based on purchasing power parity registered a growth of 5.5% compared with that of 2003 (International Monetary Fund, 2004§). The value of industrial production in constant prices increased by about 9.7% compared with that of 2003. During the same period, the value of output of the mining and quarrying sector increased by about 2% compared with that of 2003. In 2004, the gross output of industry represented about 24% of the GDP (Główny Urząd Statystyczny, 2005a, p. 327, 329).

In 2004, the aggregate sales value of the mining sector amounted to 4.9% of total industrial sales. The sales value (current prices) of coke and refined petroleum, base metals and industrial minerals, accounted for 5.2%, 4.7%, and 4.1%, respectively, of total industrial sales during the same period (Główny Urząd Statystyczny, 2005a, p. 327-328, 445).

Total sales for the year by the mining and quarrying sector (constant prices) increased by 1.0% compared with those of 2003; of this total, collective sales by the coal, lignite, and peat mining industries increased by 3.2%. Sales of processed industrial minerals increased by 12%; those of processed base metals rose by about 22.1% compared with those of 2003; and sales of coke and refined petroleum collectively increased by about 6.2% (Główny Urząd Statystyczny, 2005c, p. 119).

Government Policies and Programs

The Government of Poland remained committed to privatizing fully the country's iron and steel industry. The latest data available (2003) show the total number of mining enterprises to have increased to 742 in 2002 from 695 in 2001, of which the number of state-owned enterprises declined to 33 from 35 in 2001 (Ney and Smakowski, 2004, p. x). Limited-liability companies, joint stock companies, and partnerships constituted about 80%, 11%, and 4%, respectively, of the total mining enterprises. Efforts to restructure and privatize Poland's steel industry continued to be among the leading mineral industry concerns during the year.

Production and Trade

In 2004, the metals sector reported increased output of aluminum, copper (in concentrate, smelter and refined), gold, lead (refined), pig iron, crude steel and semimanufactures, silver, and zinc (refined). The production of cadmium declined compared with that of 2003 (table 5).

Among industrial minerals, production increases in 2004 were reported for, among others, bentonite, hydraulic cement, dolomite, processed feldspar, lime, limestone (non-lime use), and salt. Among mineral fuels, production gains were reported for total coal and crude petroleum; natural gas production declined slightly (table 5).

Although Poland was a leading European producer and processor of minerals and mineral fuels, Poland still depended heavily on imports to meet demand. According to the Mineral and Energy Economy Research Institute of Poland's Academy of Sciences, of the 121 mineral commodities that were reviewed, 48 (40%) were in the category of total import dependence. Additionally, seven mineral commodities, or about 6% of the total, were in the category of import dependence of more than 50% (Ney and Smakowski, 2004, p. xi-xvii).

In 2003, Poland's mineral imports that exceeded exports included, in order of value, mineral fuels (about sevenfold) and industrial mineral (more than threefold). Export categories that exceeded imports in value were metals (44%) and mineral fertilizers (71%). Poland's overall mineral trade deficit in 2003 amounted to more than \$4 billion (Ney and Smakowski, 2004, p. xxi). Given the anticipated increases in demand for aluminum, iron ore, natural gas, and petroleum, the mineral trade debt was expected to increase.

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—Poland's primary aluminum, which was produced in Konin at Aluminium Konin-Impexmetal S.A. (Konin), was based entirely on imported alumina. Alumina imports in 2003 (the latest year for which trade data were available) amounted to about 146,000 metric tons (t) and were chiefly used in primary aluminum production (table 8). A small amount (less than 15%) was used in the nonmetallurgical sphere (cement, chemicals, glass, and refractories).

In 2004, the production of primary aluminum metal increased slightly (about 1%). Imports of aluminum and aluminum products in 2004 totaled about 520,000 t, which was an increase of about 47% compared with those of 2003. Exports of aluminum and aluminum products totaled about 332,000 t, or about a 4.1% increase compared with those of the preceding year (tables 8 and 9).

Imports of bauxite in 2003 amounted to about 69,000 t and, given that no exports were recorded, were equivalent in volume to bauxite consumption during the same period. Bauxite was used to produce abrasives, aluminous cement, and refractory products. In 2003, bauxite imports rose by about 39% compared with those of 2002 (Ney and Smakowski, 2004, p. 46, 48).

Cadmium.—Because of its association with sphalerite (zinc-iron sulfide), cadmium in Poland was produced as a byproduct of lead and zinc mining and processing operations in the Silesia-Cracow region. In 2004, refined cadmium production at Huta Cynku "Miasteczko Slaskie" amounted to 356 t, which was about 5% less than that produced in 2002. Data available for 2003 showed cadmium net exports to have exceeded production by about 14%. Cadmium reserves, as of December 31, 2003, amounted to 66,450 t, of which 21,990 t was exploited (Ney and Smakowski, 2004, p. 65).

Copper.—All copper ore in Poland was mined by Kombinat Gorniczno Hutniczy Miedzi (KGHM) Polska Miedz S.A. (KGHM S.A.), which was a major world copper mining, beneficiation, smelting, and refining complex in the Lubin area. KGHM S.A. accounted for almost 4% of world mine copper production in 2004. Using the room and pillar method, the ore was worked at the Lubin, the Polkowice-Sieroszowice, and the Rudna Mines at five deposits at depths that ranged from 600 to 1,200 meters (about 1,900 to 3,700 feet). Chalcocite was the principal mineral in the ore; smaller amounts of bornite and chalcopyrite also were present. The mineralization was mainly in the shale horizon, but extends also into the overlying carbonate and underlying sandstone layers. As of December 31, 2003, total resources of copper-bearing material amounted to about 2.3 billion tons (Gt), which contained about 48 million metric tons (Mt) of copper. Of the 2.3 Gt, about 1.4 Gt reserves of copper were under exploitation and contained about 30 Mt of copper (table 7). In 2003, ore grades ranged from 1.99% to 2.01% Cu (Ney and Smakowski, 2004, p. 130).

The Rudna Mine was the leading copper ore producer with a mining capacity of about 11 million metric tons per year (Mt/yr) of ore. The concentrator at Rudna processed Rudna ores and some ores from the Polkowice-Sieroszowice Mine; its capacity was rated to produce about 700,000 metric tons per year (t/yr) of concentrate. Annual output by the Polkowice-Sieroszowice Mine and concentrator amounts to about 9.2 Mt of ore and 450,000 t of concentrate. The Lubin Mine accounted for about 7.5 Mt/yr of ore to produce about 465,000 t/yr of concentrate (Ney and Smakowski, 2004, p. 132-133).

In 2004, Poland's production of copper (in ore) increased by about 3.5% compared with that of 2003. Similarly, the recovery of copper in concentrate increased by about 6.3% compared with that of 2003. The output of primary and secondary smelter copper

registered an increase of about 5% to about 571,000 t from about 543,500 t in 2003. The total output of electrolytically refined copper (primary and secondary) increased by about 3.9% compared with that of 2003 (table 1).

Trade data for 2004 shows that Poland's net exports of unwrought refined copper and copper alloys amounted to 282,000 t (valued at about \$789 million), which was an increase of about 2% compared with those of 2003; exports of copper manufactures and semimanufactures increased by about 46% compared with those of 2003. In 2004, Germany, France, China, and Italy (in order of value of imports) were the principal importers of copper from Poland (table 9; Główny Urząd Statystyczny, 2005b, p. 557).

In 2004, officials of Poland's State Treasury, which controls more than 44% of the shares of KGHM S.A.'s stock, indicated that although further sales of state-owned shares of stock would not be ruled out, such sales would take place only if other state-sponsored privatization projects were to fail and there were a need to inject emergency funds into the state budget (Metal Bulletin, 2004c; Reuters, 2004).

KGHM S.A.'s management indicated early in the year that it would resume operations at the copper-cobalt mining (Kimpe deposit) and processing facilities in the Katanga Province of the Democratic Republic of the Congo following the resolution of legal issues that lead to the suspension of operations in 2000 (Metal Bulletin, 2004a).

Gold.—In 2004, Poland's gold production continued to be based almost entirely on the country's copper mining operations. The gold content of the copper concentrates produced by KGHM S.A. were reported to be about 1 gram per metric ton; total reserves were determined to be about 50 t (Ney and Smakowski, 2004, p. 202). Byproduct gold, which was produced at KGHM S.A.'s copper refineries, increased by about 48% in 2004 compared with that of 2003. The gold was recovered at KGHM S.A.'s 550-kilogram-per-year precious metals plant (using the Boliden, Klado method), which was a division within the Glogow smelter and refinery. The amount of gold recovered at Glogow has varied with changes in the proportion of ores produced at the three mines, each of which has a different average gold content. Poland's annual domestic consumption of gold in recent years ranged from about 260 to 390 kilograms (Ney and Smakowski, 2004, p. 202).

Iron and Steel.—In 2004, the output of crude steel and pig iron rebounded from the production shortfalls of 2003. Output levels of pig iron and crude steel rose by about 14% and 16%, respectively, compared with those of 2003 (table 5).

Poland depended on imported iron ores and concentrates and on such alloying materials as manganese ore and chromite to produce the ferroalloys that were needed by the steel industry. According to the latest trade figures, imports of iron ore amounted to almost 11 Mt in 2004, which was an increase of about 22% compared with those of 2003 (table 8).

The denationalization of Polskie Huty Staly S.A., which was a state-owned corporation that consolidated several steelworks (Huta Cedler, Huta Florian, Huta Katowice, and Huta Sendzimira), was achieved in 2003 through the sale of the majority of stock to the LNM Group of the United Kingdom. In 2004, Polskie Huty Staly was renamed Ispat Polska Stal S.A. (Metal Bulletin, 2004b, d).

Lead and Zinc.—Poland worked 3 of the 21 known lead-zinc deposits in the Silesia-Crakov area, which held about 41 Mt of ore out of a total resource of about 180 Mt of lead and zinc ore. Lead and zinc also were recovered from copper ore mined by KGHM S.A. in the Lubin region. About 33% of total mined lead came from copper mining and processing. Despite the presence of sphalerite in KGHM S.A.'s copper deposits, the low zinc content of the ore had made metal recovery uneconomical (Ney and Smakowski, 2004, p. 264, 502). In 2004, mine production of lead in concentrate declined by about 40% compared with that of 2003; zinc in concentrate, however, increased slightly.

The total output of refined lead (primary and secondary) increased by about 2.3% compared with that of 2003. In 2004, the volume of imports of refined lead exceeded exports by more than 22% (tables 8 and 9).

Zinc was obtained from lead-zinc ores in the Silesia-Cracow region from two underground mines. The Olkusz-Pomorzany Mine, which is located near Olkusz and was part of the ZGH Boleslaw operation, produced ore that graded about 1.69% lead and 4.2% zinc, and the Trzebieńka Mine and concentrator at Trzebieńka produced ore that graded 1.67% lead and 3.4% zinc. The declining trend in the mine production of zinc for the years 1999 to 2002 (table 5) was attributed mainly to depletion of the ore (Ney and Smakowski, 2004, p. 264, 503-504).

In 2004, total refined zinc production (smelter and electrolytic) increased slightly compared with that of 2003. In 2003, total imports of zinc and zinc-lead concentrates, in terms of gross weight, amounted to about 114,000 t (about 68,000 t of contained zinc). Romania, Canada, Australia, and Honduras (in descending order) were the main suppliers of zinc concentrates to Poland. Poland's exports of zinc concentrates amounted to about 64,500 t (about 39,000 t of contained zinc). In 2004, exports of zinc in all forms, including fabricated items, amounted to about 82,000 t and had a value of about \$93 million (Ney and Smakowski, 2004, p. 505-509; Główny Urząd Statystyczny, 2005b, p. 182).

Silver.—In 2004, Poland remained among the major world producers of silver and accounted for about 6% of world mine production (Hilliard, p. 151). Copper and, to a lesser extent, lead and zinc mining were Poland's domestic sources of primary silver, which was associated with these ores. The country's copper mining, smelting and refining complex, which was operated by KGHM S.A. in the Lubin area, produced about 98% of the country's byproduct silver, which amounted to 1,344 t in 2004. In 2004, exports of silver amounted to about 683 t and had a net value of more than \$267 million. The top three importers of Polish silver were (in descending order of value) the United Kingdom, Germany, and Belgium (table 5; Główny Urząd Statystyczny, 2005b, p. 182, 532).

Industrial Minerals

Poland produced a broad range of industrial minerals that included calcareous and silicate rocks and aggregates, clays, feldspar, gypsum, magnesite, salt, and sulfur, which served the needs of the country's chemical and construction industries. Poland remained among the leading world producers of lime, nitrogen (in ammonia), salt, and sulfur (Kostick, 2005; Kramer, 2005; Miller, 2005; Ober, 2005).

Cement.—In 2004 the output of hydraulic cement increased by about 10.2% compared with that of 2003. In 2004, Poland's volume of cement exports rose by almost 36% compared with those of 2003; the total value of cement exports amounted to \$33 million and imports, \$30 million (table 9; Główny Urząd Statystyczny, 2005b, p. 390).

Sulfur.—Sulfur production in 2004 appeared to have stabilized, with output greater than that of 2003. Poland's native sulfur production had declined substantially in 2001 following the closure of two of the country's three main mine producers. In 2004, however, native sulfur production increased to 821,000 t (8%).

Mineral Fuels

Coal.—In 2004, bituminous coal production declined slightly (by 2%) compared with that of 2003; the production of lignite and brown coal increased slightly. In 2004, the country's net exports of bituminous coal and anthracite amounted to about 20 Mt, which was a decline of about 2% compared with those of 2003. Germany, Austria, Slovakia, and Finland (in order of value) were the major importers of Polish coal (table 9; Główny Urząd Statystyczny, 2005b, p. 219).

The Upper Silesian, the Lower Silesian, and the Lublin Basins have exploitable resources that amounted to 44,100 Mt of coal in 128 deposits. The Upper Silesian Basin represented the major portion of the country's total reserves with about 79% of the total in 110 deposits (Ney and Smakowski, 2004, p. 224).

Natural Gas and Petroleum.—Poland depended on imports to meet its needs for oil and gas. In 2004, Poland's import of petroleum amounted to 17,309,000 t, which was slightly less than those in 2003. The Russian Federation remained Poland's chief supplier of hydrocarbons, which, in 2004 supplied (in terms of value) about 95% and 60%, respectively, of Poland's imports of petroleum and natural gas (Główny Urząd Statystyczny, 2005b, p. 221, 223).

References Cited

- Edelstein, D.L., 2005, Copper: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 54-55.
Gabby, P.N., 2005, Lead: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 94-95.
Główny Urząd Statystyczny, 2005a, *Maly rocznik statystyczny Polski* [Concise handbook of Poland's statistics]: Warsaw, Poland, Główny Urząd Statystyczny, 678 p.
Główny Urząd Statystyczny, 2005b, *Rocznik Statystyczny Handlu Zagranicznego* [Statistical Yearbook of Poland's Foreign Trade]: Warsaw, Poland, Główny Urząd Statystyczny, September, 676 p.
Główny Urząd Statystyczny, 2005c, *Rocznik Statystyczny Przemysłu* [Statistical Yearbook of Industry]: Warsaw, Poland, Główny Urząd Statystyczny, December, 544 p.
Hilliard, H.E., 2005, Silver: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 150-151.
Kostick, D.S., 2005, Salt: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 138-139.
Kramer, D.A., 2005, Nitrogen (Fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 116-117.
Metal Bulletin, 2004a, Green light for KGHM's copper-cobalt project: Metal Bulletin, no. 8827, February 2, p.15.
Metal Bulletin, 2004b, LNM gets green light from Polish competition watchdog: Metal Bulletin, no. 8831, March 1, p. 21.
Metal Bulletin, 2004c, New KGHM CEO backs state stake in copper producer: Metal Bulletin, no. 8839, April 26, p. 12.
Metal Bulletin, 2004d, Polish union voices concern over LNM investments: Metal Bulletin, no. 8862, October 4, p. 6.
Miller, M.M., 2005, Lime: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 96-97.
Ney, Roman, and Smakowski, Tadeusz, eds., 2004, *Bilans Gospodarki Surowcami W Polce Na Tle Gospodarki Swiatowej 1998-2003* [Minerals Yearbook of Poland]: Crakow, Poland, Polish Academy of Sciences, Ministry of Environmental Protection, Natural Resources and Forestry, December, 515 p.
Ober, J.A., 2005, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 162-163.
Plachy, J., 2005, Zinc: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 188-189.
Reuters, 2004, Polish treasury says in no hurry to sell KGHM stake: London, United Kingdom, Reuters press release, March 23, 1 p.

Internet Reference Cited

- International Monetary Fund, 2004 (September), Poland, World Economic Outlook Database, accessed January 27, 2006, via URL <http://www.imf.org/external/pubs/ft/weo/2004/62/data/dbgim.cfm>.

SLOVAKIA

Slovakia was a modest regional producer of a variety of minerals. Aluminum and steel production formed the dominant elements of the country's metals sector. Steel production largely was based on imported raw materials, and that of aluminum was based entirely on imported bauxite and alumina. Small quantities of copper, gold, lead, and zinc also were produced; the commercial deposits of these minerals have been virtually depleted. Industrial minerals production included that of barite, clays, magnesite, and salt. Slovakia's production of mineral fuels comprised brown coal and lignite and minor quantities of gas and petroleum (table 10).

The economy of Slovakia continued to develop towards a full market system. The need to denationalize the state's commercial assets and to reduce subsidies to the public sector expeditiously often was tempered by policies promulgated to maintain social stability that resulted in increased public sector employment and uneven economic performance. In 2004, Slovakia's gross domestic product based on purchasing power parity increased by 5.6% compared with that of 2003. Industrial production in 2004 continued to show recovery with a growth rate of 9.7% compared with that of 2003 (International Monetary Fund, 2004§).

In 2004, Slovalco, which was Slovakia's sole producer of primary aluminum, increased the output of alumina by about 19%; the production of primary aluminum rose by 6% compared with that of 2003 (table 10).

Although gold mine production ceased in 2001, small amounts of gold were produced from remaining stocks during the year. Exploration for gold and resource assessment at the Kremnica gold exploration area continued during 2004 under the auspices of the Tournigan Gold Corporation of Canada (Tournigan Gold Corporation, 2004).

According to the latest available trade data, Ukraine and Russia remained Slovakia's main suppliers of iron ore and concentrate, and accounted for 52% and 47%, respectively, of total imports, which amounted to about 5 million metric tons in 2002 (Balaz and Treger, 2003, p. 70).

In 2004, U.S. Steel Kosice reported a decline of steel output by about 3% compared with that of 2003; pig iron production declined by almost 2% (United States Steel Corporation, 2003).

In the mineral fuels sector, brown coal production declined by about 4% in 2004 compared with that of 2003. Russia remained Slovakia's chief supplier of natural gas and petroleum and accounted for more than 98% of the country's imports of these fuels.

References Cited

- Balaz, Peter, and Treger, Milan, eds., 2003, *Nerastene suroviny Slovenskej Republiky* [Slovak Minerals Yearbook]: Bratislava, Slovakia, Geological Survey of Slovak Republic, 175 p.
- Tournigan Gold Corporation, 2004, Tournigan Gold Corporation—Revised mineral resource estimate at Kremnica: Vancouver, British Columbia, Canada, Tournigan Gold Corporation press release, February 11, 3 p.

Internet Reference Cited

- International Monetary Fund, 2004 (September), Slovakia, World Economic Outlook Database, accessed January 27, 2006, via URL <http://www.imf.org/external/pubs/ft/weo/2004/62/data/dbgim.cfm>.

TABLE 1
CZECH REPUBLIC: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004
METALS						
Aluminum, metal, secondary ^e		40,000	20,000	20,000	20,000	15,000
Copper, refined, secondary ^e		20,000	18,000	18,000	15,000 ^r	10,000
Gold, metal ^e	kilograms	3,000	2,000 ²	2,000	1,000	1,000
Iron and steel:						
Iron ore:						
Gross weight	thousand metric tons	21	20	--	--	--
Fe content ^e		6,000	6,000	--	--	--
Metal:						
Pig iron	thousand metric tons	4,621	6,316	4,840	5,200	5,385
Ferroalloys, total electric furnace ^e	do.	1	1	1	--	--
Steel, crude	do.	6,216	6,316	6,512	6,800	7,033
Semimanufactures	do.	11,637	12,645	12,500 ^e	12,500 ^e	12,500 ^e
Lead, metal, secondary ^e		25,000	25,000	25,000	26,000 ^r	25,000
Silver ^e		25	25	25	25	25
Uranium, mine output, U content		498	490	477	458	435
Zinc, metal, secondary ^e		150	250	250	250	250
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	4,093	3,550	3,217	3,465	3,709
Clays:						
Bentonite	do.	280	224	174	199	201
Kaolin	do.	5,573	5,543	3,650	4,155	3,862
Other	do.	1,120	585	564	550 ^e	500 ^e
Diamond, synthetic ^e	carats	5,000	5,000	5,000	5,000	5,000
Diatomite		34,000	83,000	28,000	41,000 ^r	33,000
Feldspar		337,000	373,000	401,000	421,000	488,000
Fertilizer materials:						
Nitrogenous, N content		257,000	250,000 ^e	250,000 ^e	251,000	271,000
Phosphatic, P ₂ O ₅ content ^e		100,000	100,000	100,000	100,000	100,000
Potassic, K ₂ O content ^e		20,000	20,000	20,000	20,000	20,000
Mixed		75,000	75,000 ^e	75,000 ^e	36,000	30,000
Gemstones, crude, pyrope-bearing rock		62,000	47,000	52,000	53,000 ^r	53,000 ^e
Graphite		23,000	17,000	16,000	9,000	5,000
Gypsum and anhydrite, crude		82,000	24,000	108,000	104,000	71,000
Lime, hydrated and quicklime	thousand metric tons	1,202	1,300	1,120	1,251 ^r	1,264
Nitrogen, N content of ammonia ^e		250,000	206,000	215,000	235,000	250,000
Sand and gravel:						
Common sand and gravel	thousand metric tons	12,640	12,100	12,400	13,401 ^r	13,653
Foundry sand		829	771	476	714 ^r	831
Glass sand		985	974	853	904	829
Stone:						
Basalt, for casting		14,000	15,000 ^e	14,000	13,000	12,000
Dimension stone	thousand cubic meters	320,000	300,000	285,000	244,000 ^r	259,000
Limestone and other calcereous stones	thousand metric tons	11,808	10,887	10,186	10,236	10,568
Building stone	thousand cubic meters	9,451	10,500	10,600	12,459 ^r	13,177
Sulfur, byproduct, all sources ^e		40,000	40,000	40,000	45,000 ^r	45,000
Sulfuric acid		350,000	220,200	240,524	239,000	234,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	17,028	14,808	14,097	13,382	14,648
Brown and lignite	do.	51,063	51,643	49,335	50,390	48,290
Coke	do.	3,411	3,519	3,536	3,556	3,538
Fuel briquets from brown coal	do.	253	280	302	314	300

See footnotes at end of table.

TABLE 1--Continued
CZECH REPUBLIC: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004
MINERAL FUELS AND RELATED MATERIALS--Continued						
Gas:						
Manufactured, all types ^c	million cubic meters	800	800	800	800	800
Natural, marketed ³	do.	118	101	91	131	175
Petroleum:						
Crude:						
As reported	thousand metric tons	168	178	253	310	299
Converted	thousand 42-gallon barrels	1,142	1,100 ^c	1,620 ^c	1,984	1,880 ^c
Refinery products ^c	do.	35,000	35,000	35,000	35,000	35,000

^cEstimated; estimated data are rounded to no more than three significant digits. ^rRevised. -- Zero.

¹Table includes data available through January 2006. In addition to the commodities listed, arsenic, dolomite, illite, sodium compounds, talc, and zeolite are produced, but available information is inadequate make reliable estimates of output levels.

²Reported figure.

³Includes gas produced from coal mines. Gross output of natural gas is not reported but is believed to exceed reported marketed output by an inconsequential amount.

TABLE 2
CZECH REPUBLIC: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities ¹	Annual capacity
Bentonite	Keramost a.s.	Most	150
Cement	Bohemia, Cizkovice, Hranice, Karlov Dvor, Lochkov Pracovice, and Velary	Bohemia	3,500
Do.	Bystre, Malomerice, Mokra, Ostrava-Kunice, and Zahorie	Moravia	2,800
Clay, koalin	Mines in Karlovy vary area	West Bohemia	450
Do.	Mines in Plzen area	Central Bohemia	150
Coal:			
Bituminous	Mines in OKD coal basin	Ostrava-Karvina, north Moravia	22,100
Do.	Mines in KD coal basin	Kladno, central Bohemia	3,000
Brown	SHD administration	Most, northwest Bohemia	61,000
Do.	HDB administration	Sokolov, west Bohemia	17,000
Lignite	JLD administration	Hodonin, south Moravia	5,000
Copper, ore	Zlate Hory	North Moravia	300
Graphite	Grafitove doly Stare Mesto-F s.r.o.	Stare Mesto	35
Mica	GARMICA s.r.o.	Netolice	5
Lead-zinc, ore	Horni Benesov and Zlate Hory	do.	400
Lead, metal, secondary, refined	Kovohute Pribram	Pribram	26
Natural gas	billion cubic meters Gasfields around Hodonin	South Moravia	25
Petroleum:			
Crude	Oilfields around Hodonin	do.	160
Refinery	thousand 42-gallon barrels per day Kolin, Kralupy, Pardubice, and Litvinov	Bohemia	200
Steel, crude	Nova Hut s.p. (Ostrava)	Kunice-Ostrava	3,800
Do.	Zelezarne Vitkovice	Vitkovice-Ostrava	900
Do.	Trinecke Zelezarny (Trinecke Iron and Steel Works)	Trinec	3,000
Do.	Poldi United Steel Works	Kladno-Prague	1,700
Do.	Zelezarny Bila Cerkev	Hradek-Rokycany	300
Do.	Zelezarny Veseli, a.s.	Veseli and Moravou	300
Do.	Zelezarny Chomutov s.p.	Chomutov	350
Do.	Bohumin Iron and Steel Works	Bohumin	400
Titanium dioxide	Precheza A.S	Precheza	25
Uranium	DIAMO s.p.	Straz pod Ralskem	2

¹Names and locations of mines and crude oil refineries are identical.

TABLE 3
HUNGARY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²		2000	2001	2002	2003 ^e	2004
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	1,046	1,000	720	666 ³	647
Alumina, gross weight, calcined basis	do.	357	300	220 ^e	300 ^r	300
Metal:						
Primary		33,850	34,000	35,000 ^e	34,000 ^r	34,400
Secondary		55,000	76,000	75,000 ^e	50,000	50,000 ^e
Total		88,850	110,000	110,000 ^e	84,000 ^r	84,400
Copper, metal, refined including secondary ^e		12,000	12,000	10,000	10,000	10,000
Gallium		5,600 ^e	5,600 ^e	5,400	5,500 ³	5,500
Iron and steel, metal:						
Pig iron	thousand metric tons	1,340	1,225	1,334	1,333 ^{r,3}	1,350
Ferroalloys ^{e,4}		8,000	8,000	1,900	8,000	8,000
Steel:						
Crude	thousand metric tons	1,969	2,056	2,141	1,983 ^{r,3}	1,957
Semimanufactures, rolled only ^e	do.	1,900	1,900	1,900	1,803 ^{r,3}	1,800 ^e
Manganese ore:						
Run-of-mine:						
Gross weight		41,000	38,000	49,000 ^e	48,000 ³	42,000
Mn content ^e		11,000	10,000	12,700 ^r	12,500 ^r	11,300
Concentrate: ^e						
Gross weight		15,000	15,000	15,000	15,000	15,000
Mn content		5,000	5,000	5,000	5,000	5,000
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	3,358	3,452	3,510	3,573 ^{r,3}	3,580
Clays:						
Bentonite:						
Raw		4,818	5,200	3,700	87,029 ^{r,3}	87,030
Processed ^e		2,000	2,500	1,400	42,000 ^r	42,000 ³
Kaolin, raw and washed		7,100	8,000	4,300	13,250 ^{r,3}	13,300
Gypsum and anhydrite ^e		251,000	252,000	72,200	62,000 ^r	62,000 ³
Lime, calcined ^e	thousand metric tons	500	500	500	500	500
Nitrogen, N content of ammonia ^e	do.	250	224	238	232 ³	274 ³
Perlite		150,000 ^e	151,000	140,000	59,530 ^{r,3}	59,800
Sand and gravel:						
Gravel	thousand metric tons	13,490	10,645	29,138	35,000 ^r	35,000
Sand:						
Common ^e	thousand cubic meters	300	300	300	300	300
Foundry		173,000	168,000	152,000	162,600 ^{r,3}	163,000
Glass		340,000	339,000	317,000	225,300 ^{r,3}	226,000
Stone:						
Dimension, all types ^e	thousand metric tons	5,000	5,000	5,626 ³	5,500	5,000
Dolomite	do.	787	800	4,196	4,398 ^{r,3}	2,750
Limestone	do.	668	700	7,152	2,459 ^{r,3}	2,460
Sulfur, byproduct, elemental, all sources ^e		30,000	43,000 ^r	52,000 ^r	51,000 ^r	50,000
Sulfuric acid ^e		80,000	80,000	80,000	80,000	80,000
Talc ^e		500	500	500	500	500
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	744	573	660	667 ^{r,3}	670
Brown	do.	5,670	5,384	4,570	4,128 ^{r,3}	4,130
Lignite	do.	7,862	8,043	7,574	8,564 ^{r,3}	8,600
Total	do.	14,276	14,000	12,804	13,359 ^{r,3}	13,400
Coke, metallurgical ^e		650	650	650	650	650
Gas, natural, marketed		3,350	3,280	3,353	3,010 ³	3,100
Peat, agricultural use ^e		50	50	150	200 ³	200

See footnotes at end of table.

TABLE 3--Continued
HUNGARY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2000	2001	2002	2003 ^e	2004	
MINERAL FUELS AND RELATED MATERIALS--Continued						
Petroleum:						
Crude:						
As reported	thousand metric tons	1,128	1,064	1,050	1,133 ³	1,100
Converted	thousand 42-gallon barrels	8,607	8,118	8,011	8,640	8,400 ^e
Refinery products ^{e, 5}	do.	40,000	40,000	40,000	40,000	40,000

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^fRevised.

¹Table includes data available through January 2006.

²In addition to the commodities listed, diatomite and a variety of industrial minerals and construction materials, such as common clay, are produced, but available information is inadequate to make reliable estimates of output levels.

³Reported figure.

⁴Hungary is believed to produce some blast ferromanganese.

⁵Excludes refinery fuel and losses.

TABLE 4
HUNGARY: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Alumina	Magyar Aluminium Ltd. (MAL)	Ajka Timfoldgyar plant, about 120 kilometers southwest of Budapest, near Lake Balaton	400
Do.	do.	Almasfuzito Timfoldgyar plant near the Czech Republic border, 63 kilometers northwest of Budapest	240
Do.	do.	Moson-Magyarovar plant, in northwestern corner of Hungary, about 12 kilometers from Austrian and Czechoslovak borders	30
Aluminum, primary	do.	Inota plant, near Varpalota, 75 kilometers southwest of Budapest	46
Bauxite	Magyar Aluminium Ltd. (MAL) (Bakony Bauxite Mines Ltd.)	Bakony District, extending roughly 100 kilometers northeast along Lake Balaton	1,500
Cement	Belpafatvalvi Cement es Meszipari Rt [Heidelberger & Schwenk (Germany) and Hungarian Group]	Belapatfalva, near Miskolc, 125 kilometers northeast of Budapest	1,100
Do.	Beremend Cement es Meszipari Rt [Heidelberger & Schwenk (Germany), 100%]	Beremend, 45 kilometers south of Pecs	1,090
Do.	Dunai Cement es Meszmu Kft [Heidelberger & Schwenk (Germany), 100%]	Vac, 50 kilometers north of Budapest	1,200
Do.	Hejocsabai Cement es Meszipari Rt [Holderbank (Germany) and Hungarian Group]	Hejoscaba, 150 kilometers northeast of Budapest	1,450
Do.	Labatlani Cementipari kft [Holderbank (Germany), 100%]	Labatlan, 20 kilometers north of Tatabanya	550
Clays	Agyag-Asvany Kft [Navan Resources PLC (Ireland)]	Felsopeteny, one underground and two open pit mines and a 5,000-metric-ton-per-year processing plant. Products are ball clay, kaolin, and refractory clay	35
Coal:			
Bituminous and lignite	Magyar Szenbanyaszati Troszt (MSZT) (Hungarian Coal Mining Trust)	Tatabanya and Oroszlany coal mining region, 45 kilometers west of Budapest	8,900
Do.	do.	Mecsek coal mining region, near Pecs and Komlo, north of the Yugoslav border	3,100
Do.	do.	Borsod coal mining region, 130 kilometers northeast of Budapest	5,200
Lignite	do.	Thorez opencast mine at Visonta, 80 kilometers northeast of Budapest	7,000
Manganese	Orszagos Erc-es Asvanybanyak (National Ore and Mineral Mines)	Urkut manganese ore mines, 120 kilometers southwest of Budapest	160
Natural gas	million cubic feet Hungarian Oil and Gas Co. (MOL)	Szeged and Algyo gasfields, southern Hungary	152,000
Do.	do.	Hajduszoboszo gasfields, 180 kilometers east of Budapest	50,000
Do.	do.	Smaller gasfields are Szank, Kardoskut, Bekes, Berefurdo, and others	39,000
Perlite	Perlit 92 Kft [Navan Resources PLC (Ireland) and Hungarian Group]	Palhaza, northeastern Hungary; open pit mine and processing plant	150
Petroleum:			
Crude	million 42-gallon barrels Hungarian Oil and Gas Co. (MOL)	Szeged-Algyo Field, near Romanian-Yugoslav border; 50% of total capacity	7
Refined	do. Subsidiaries of Hungarian Oil and Gas Co. (MOL):		
Do.	do. Danube Petroleum Refining Co.	Szazhalombatta	55
Do.	do. Tisza Petroleum Refining Co.	Leninaváros	22
Do.	do. Zala Petroleum Refining Co.	Zalaegerszeg	4
Silica	Uveg-Asvany Kft. [Navan Resources PLC (Ireland) and Hungarian Group]	Mine and plant at Fehevarcsugo	660
Steel	Dunaferr Dunai Vasmu Rt	60 kilometers south of Budapest	1,400
Do.	OAM-Ozdi Acelmuevek Kft	120 kilometers northeast of Budapest	360
Do.	DAM-Diosgyori Acelmuevek es Kereskedelmi Kft	Diosgyoer, 145 kilometers northeast of Budapest	850

TABLE 5
POLAND: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2000	2001	2002	2003	2004
METALS					
Aluminum, metal:					
Primary metric tons	46,941	44,723	49,125	45,371	45,807
Secondary do.	5,400	9,900	9,700	6,500 ^{r, e}	6,500 ^e
Total do.	52,341	54,623	58,825	51,900 ^{r, e}	52,300 ^e
Cadmium, metal, primary do.	6	330	440	375 ^r	356
Copper:					
Ore:					
Gross weight	28,503	30,227	29,705	29,992	31,800
Cu content metric tons	525,000	545,000	568,000	570,000 ^e	590,000
Concentrate:					
Gross weight	1,755	1,834	1,935	1,900 ^e	1,950
Cu content metric tons	509,000	532,000	503,000	495,000	526,000
Metal:					
Smelter:					
Primary do.	498,146	485,900 ^r	510,700	515,000 ^e	541,000
Secondary ^e do.	19,700	27,900	29,400	28,500 ^e	30,000
Total do.	517,846	513,800 ^r	540,100	543,500	571,000
Refined, electrolytically, primary and secondary do.	486,002	498,451	508,674	529,616	550,066
Gold, mine output, Au content kilograms	367	349	296	356 ^r	527
Iron and steel:					
Pig iron:					
For foundry use	246	98	52	132 ^e	200
For steel production	6,246	5,343	5,245	5,500 ^e	6,200
Total	6,492	5,441	5,297	5,632	6,400
Ferroalloys:					
Blast furnace, ferromanganese metric tons	--	500	600	500 ^e	500 ^e
Electric furnace:					
Ferrosilicomanganese do.	19,000	20,000	7,500	8,000 ^e	8,000 ^e
Ferrosilicon do.	56,000	48,600	41,800	42,000 ^e	42,000 ^e
Total do.	75,000	69,100	49,900	50,500 ^e	50,500 ^e
Steel, crude:					
From open hearth furnaces	424	178	169	-- ^r	--
From oxygen converters	6,794	5,822	5,531	6,070 ^r	6,865
From electric furnaces	3,290	2,809	2,667	3,040 ^r	3,713
Total	10,508	8,809	8,367	9,110 ^r	10,578
Semimanufactures:					
Hot rolled	7,616	6,599	6,114	6,595	6,600
Cold rolled	1,826	1,350	1,349	1,533	1,600
Pipe	483	440	309	309	310
Lead:					
Pb-Zn ore, gross weight metric tons	4,500	4,600	4,500 ^e	4,500 ^e	3,900
Mine output:					
Pb content of Pb-Zn ore do.	67,800	69,600	73,500	55,000 ^r	51,000
Pb content of Cu ore do.	46,000	52,000	46,900	45,229 ^r	36,000
Total do.	113,800	121,600	120,400	100,229 ^r	87,000
Concentrate:					
Gross weight do.	84,400	86,400	85,000	85,000 ^e	52,000
Pb content do.	51,200	52,600	56,600	57,000	38,000
Metal:					
Smelter:					
Primary do.	29,700	30,800	29,400	25,000 ^e	25,000 ^e
Secondary do.	46,400	39,500	44,700	45,000 ^e	45,000 ^e
Total do.	76,100	70,300	74,100	70,000 ^e	70,000 ^e
Refined, primary and secondary do.	55,900 ^r	66,000 ^r	65,800 ^r	55,563 ^r	56,827

See footnotes at end of table.

TABLE 5--Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2000	2001	2002	2003	2004
METALS--Continued					
Platinum-group metals, average content of slimes: ^{c, 3, 4}					
Palladium kilograms	12	12	12	10 ^e	10
Platinum do.	21	20	20	20 ^e	20
Selenium metric tons	65	65	68	78 ^r	83
Silver, mine output, Ag content do.	1,144	1,190	1,222	1,237	1,344
Zinc:					
Zn content:					
Mine output do.	182,000	172,300	171,200	174,700 ^r	175,000 ^e
Concentrate output do.	156,900	152,700	152,200	153,900 ^r	154,000 ^e
Metal, refined, including secondary do.	173,000	174,700	158,900	154,200 ^r	155,000
INDUSTRIAL MINERALS					
Barite, beneficiated do.	2,000	2,500	2,700	3,030 ^r	3,183
Cement:					
Klinker for cement	11,559	9,335	8,812 ^r	8,525 ^r	9,000 ^e
Hydraulic cement	15,046	12,074	10,948	11,653 ^r	12,837
Portland cement	13,802	11,115	10,000	10,700 ^r	11,000 ^e
Clays and clay products, crude:					
Bentonite metric tons	--	29,000	26,200	31,648	66,143
Fuller's earth do.	29,700	29,000	26,200	27,000 ^e	28,000 ^e
Fire clay thousand metric tons	153	140	128	144	137
Kaolin:					
Crude do.	344	267	252	170 ^r	191
Beneficiated do.	99	129	114	136 ^r	191
Diatomite metric tons	1,300	1,000	1,000	700 ^r	1,000 ^e
Feldspar:					
Run of mine do.	54,000	69,000	85,000	80,000 ^e	80,000 ^e
Processed, including imported material do.	165,200	200,600	293,000	341,400 ^r	320,000
Gypsum and anhydrite:					
Natural: ⁵					
Gypsum rock	997	999 ^r	867	1,031 ^r	1,000 ^e
Anhydrite	285	285 ^r	280	297 ^r	300 ^e
Total	1,282	1,284 ^r	1,147	1,328 ^r	1,300 ^e
Synthetic gypsum	1,140	1,134	1,040	1,000 ^e	1,000 ^e
Grand total	2,422	2,418 ^r	2,187	2,328 ^r	2,300 ^e
Lime, hydrated and quicklime	2,192	1,954	1,865	1,955	2,000
Magnesite:					
Ore, crude metric tons	30,000	23,000	24,000	24,000 ^e	24,000 ^e
Concentrate do.	26,100	22,200	22,100	22,100 ^e	22,100 ^e
Calcined do.	--	200	100	100 ^e	100 ^e
Nitrogen, N content of ammonia	1,208	1,169	1,362	1,912	1,985
Salt:					
Rock	841	787	839	848	1,099
Other	2,652	2,689	2,719	3,812	4,043
Total	3,493	3,476	3,558	4,660	5,142
Sand, excluding glass sand:					
Aggregates:					
Mine output metric tons	88,514	73,107	66,722	65,000 ^e	65,000 ^e
Processed do.	73,588	62,534	62,799	63,000 ^e	63,000 ^e
Foundry sand	1,055	849	628	650 ^e	650 ^e
Filling sand	9,298	8,914	9,122	9,000 ^e	9,000 ^e
Lime-sand brick production sand thousand cubic meters	718	492	411	450 ^e	450 ^e
Silica:					
Glass:					
Construction, flat	427	394	400 ^e	400 ^e	400 ^e
Technical	68	54	60 ^e	60 ^e	60 ^e

See footnotes at end of table.

TABLE 5--Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2000	2001	2002	2003	2004
INDUSTRIAL MINERALS--Continued					
Silica--Continued:					
Glass--Continued:					
Commercial	79	81	80 ^e	80 ^e	80 ^e
Packing	976	993	900 ^e	900 ^e	900 ^e
Processed:					
Glass sand	1,532	1,423	1,235	1,402 ^r	1,500 ^e
Quartz and quartz crystal metric tons	52,200	65,900	27,000	33,000 ^{r, e}	35,000 ^e
Quartzite, refractory do.	176,700	114,200	32,000	115,400 ^r	50,000 ^e
Quartz schist do.	5,500	5,500	3,000	2,800 ^{r, e}	3,000 ^e
Sodium compounds, n.e.s.:					
Carbonate (soda ash), 98%	1,018	1,062	1,054	1,050 ^r	1,167
Caustic soda (96% NaOH)	394	348	395	427 ^r	452
Stone:					
Mine output:					
Crushed and dimension stone	24,483	22,466	22,619	23,000 ^e	23,000 ^e
Dolomite	2,204	1,639	1,585	1,815	1,986
Limestone:					
For lime production	13,858	11,324	10,306	10,000 ^e	10,000 ^e
For non-lime end use	28,257	24,289	23,233	23,747	25,463
Sulfur:					
Native, Frasch	1,369	942	760	762	821
Byproduct:					
From metallurgy	279	277	275	275 ^e	275 ^e
From petroleum	131	162	180	175 ^e	175 ^e
Total	410	439	455	450 ^e	450 ^e
From gypsum ^e	--	10	10	10 ^e	10 ^e
Grand total	1,779	1,391	1,225	1,222 ^r	1,281
MINERAL FUELS AND RELATED MATERIALS					
Carbon black	12,500	15,100	16,900	17,000 ^e	15,000
Coal:					
Bituminous	103,331	103,992	103,546	103,016 ^r	101,230
Lignite and brown	59,484	59,557	58,210	60,919	61,197
Total	162,815	163,549	161,756	163,935 ^r	162,427
Coke, coke oven	8,972	8,844	8,787	10,111	7,752
Fuel briquets, all grades	50	50	50 ^e	4 ^r	3
Gas:					
Natural million cubic meters	4,956	5,175	5,259	5,315	5,400 ^e
Manufactured:					
Town gas do.	7	6	6 ^e	4 ^r	5
Coke oven gas do.	3,905	3,919	3,752	4,245 ^r	4,216
Generator gas ^e do.	400	300	300	300	300
Total do.	4,312	4,225	4,058	4,549 ^r	4,521
Peat, fuel and agricultural	380	325	300 ^e	430 ^r	509
Petroleum:					
Crude, as reported	653	767	721	765 ^r	886
Refinery products ⁶	18,695	18,680	17,540	16,886	17,000 ^e

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. -- Zero.

¹Table includes data available through January 2006.

²In addition to the commodities listed, antimony and germanium, which are associated with polymetallic deposits, and cobalt and nickel, which are associated with copper ores, are produced in quantities that so far have not warranted further recovery.

³Based on official Polish estimates.

⁴Estimates based on reported platinum- and palladium-bearing final (residual) slimes and their average Pt and Pd content from electrolytic copper refining.

⁵Includes building gypsum, as well as an estimate for gypsum used in the production of cement.

⁶Includes virtually all major products.

TABLE 6
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2004¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Aluminum:			
Primary	Huta Aluminium "Konin" S.A.	Konin	55.
Secondary	Zakłady Metalurgiczne "Skawina"	Skawina	20.
Do.	Zakłady Metali Lekkich SA "Kety"	Kety	NA.
Do.	Zakłady Metalurgiczne "Trzebinia"	Trzebinia	NA.
Barite ²	Przedsiębiorstwo Hondlowo Usługowe R&S Spolka Jawna	Boguszow, Stanislawow	3.
Cement:			
Do.	Zakłady Cementowo-Wapiennicze Gorazdze S.A.	Chorula	1,800 clinker, 2,400 cement.
Do.	Cementownia "Ozarow" S.A.	Ozarow	2,200 clinker, 2,400 cement.
Do.	Cementownia "Chelm" S.A.	Chelm	1,440 clinker, 2,640 cement.
Do.	Kombinat Cementowo-Wapienniczy Warta S.A.	Dzialoszyn	600 clinker, 1,150 cement.
Do.	Cementownia "Malogoszcz" S.A.	Malogoszcz	1,840 clinker, 1,800 cement.
Do.	Zakłady Cementowo-Wapiennicze Nowiny S.A.	Sitkowa	785 clinker, 1,070 cement.
Do.	Cementownia "Strzelce Opolskie" S.A.	Strzelce Opolskie	1,257 clinker, 1,630 cement.
Do.	Kombinat Cementowo-Wapienniczy "Kujawy" S.A.	Bielawy	900 clinker, 1,000 cement.
Do.	Cementownia "Rudniki" S.A.	Rudniki	840 clinker, 1,470 cement.
Do.	Cementownia "Wierzbica" S.A.	Wierzbica	759 clinker, 1,000 cement.
Do.	Cementownia "Nowa Huta" S.A.	Krakow	290 clinker, 1,100 cement.
Do.	Cementownia "Rejowiec" S.A.	Rejowiec	600 clinker, 845 cement.
Do.	Cementownia "Odra" S.A.	Opole	433 clinker, 800 cement.
Do.	Cementownia "Warszawa"	Warszawa (Warsaw)	600 cement.
Do.	Cementownia "Groszowice" Sp. z o.o.	Opole	304 clinker, 425 cement.
Do.	Cementownia "Pocement-Saturn"	Wojkowice	400 cement
Do.	Cementownia "Wiek"	Ogrodzieniec	710 clinker, 240 cement.
Do.	Fabrika Cementu "Wysoka"	Lazy	304 clinker, 425 cement.
Do.	Cementownia "Wejhorowie"	Wejhorowo	42 clinker, 45 cement.
Coal:			
Anthracite	Zakład Wydobywco Przetworczy Antracytu Walbrzych-Gaj	Lower Silesia do.	200.
Bituminous	Bytomska Spolka Węglowa S.A. Rudzka Spolka Węglowa S.A. Gliwicka Spolka Węglowa S.A. Katowicki Holding Węglowy S.A. Nadwisłanska Spolka Węglowa S.A. Rybnicka Spolka Węglowa S.A. Jastrzebska Spolka Węglowa S.A. Seven independent mines Walbrzyskie Kopalnie Węgla Kamiennego KWK "Nowa Ruda" KWK "Bogdanka" S. A.	Upper Silesia (9 mines) Upper Silesia (6 mines) Upper Silesia (7 mines) Upper Silesia (11 mines) Upper Silesia (8 mines) Upper Silesia (5 mines) Upper Silesia (6 mines) do. Lower Silesia do. do.	140,000.

See footnotes at end of table.

TABLE 6--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2004¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Coal--Continued:			
Lignite	KWK "Belchatow" KWK "Turow" KWK "Konin" KWK "Adamow" KWK "Sieniawa"	Belchatow Turow Konin Adamow Sieniawa	75,000.
Coke	Zakłady Koksownicze im. Powstancow Sl. Zakłady Koksownicze "Przyjazn" Kombinat Koksochemiczny "Zabrze" Huta im. Sendzimira Huta "Czestochowa" Zakłady Koksownicze "Walbrzych"	Upper Silesia do. do. Upper Silesia (Krakow) Upper Silesia (Czestochowa) Lower Silesia	12,000.
Copper:			
Ore, gross weight (1.2%-2.2% Cu)	Kombinat Gorniczo Hutniczy Miedzi (KGHM) Polska Miedz S.A. [KGHM, S.A.]	Lubin Mine, Lubin-Glogow District	7,000.
Do.	do.	Polkowice- Sierszowice Mine, Lubin-Glogow District	9,200.
Do.	do.	Rudna Mine, Lubin-Glogow District	11,000.
Concentrate, gross weight (25.2% -25.9% Cu)	do.	Lubin beneficiation plant, Lubin-Glogow District	465.
Do.	do.	Polkowice beneficiation plant, Lubin-Glogow District	450.
Do.	do.	Rudna beneficiation plant, Lubin-Glogow District	700.
Metal, refined	do.	Refineries at Glogow I, Glogow II, and Legnica	480.
Feldspar	Strzeblowskie Kopalnie Surowcow Mineralnych	Mine at Sobotka, Lower Silesia, workings at Pagorki Zachodnie and Pagorki Wschodnie	50.
Ferroalloys:			
Electric furnace (FeSiMn, FeMn, FeCr, FeSi)	Huta "Laziska" S.A.	Upper Silesia at Laziska Gome	170.
Blast furnace (FeMn)	Huta "Pokoj" S.A.	Upper Silesia, Ruda Slaska	90.
Gold kilograms	KGHM "Polska Miedz" S.A.	Refinery at Glogow "Trzebinia"	550.
Gypsum and anhydrite	Zakłady Przemysłu Gipsowego "Dolina Nidy" Zakład Gipsowy "Stawiany" Kopalnia Anhydrytu "Nowy Lad" KGHM "Polska Miedz" S.A.	Southeastern Poland, Gacki Southeastern Poland, Szarbkow Lower Silesia, Niwnice Lower Silesia, Iwiny	1,400.
Helium million cubic meters	Zakład Odazotowania Gazu	Western Poland, Odolanow	3.
Kaolin	KSM "Surmin-Kaolin" S.A.	Lower Silesia, Nowogrodziec	50.
Lead-zinc:			
Concentrate	Zakłady Gorniczo-Hutnicze (ZGH) "Boleslaw"	Mines and concentrators at Olkusz and Pomorzany, Bukowno region	60 Pb, 160 Zn.
Do.	Zakłady Gornicze "Trzebionka" S.A.	Mines and concentrator at Trzebinia	NA.
Metal:			
Pb, refined	Huta Cynku "Miasteczko Slaskie"	Refinery at Miasteczko Slaskie	60.
Do.	Huta Metali Niezelaznych "Szopienice"	Katowice	35.
Zn, refined	Huta Cynku "Miasteczko Slaskie"	Imperial Smelter at Miasteczko Slaskie	60.
Do.	Zakłady Metalurgiczny "Silesia" (input from Huta "Miasteczko Slaskie")	Refinery at Katowice	-30.
Do.	Zakłady Gorniczo-Hutnicze "Boleslaw"	Refinery at Boleslaw	65.
Do.	Huta Metali Niezelaznych "Szopienice"	Katowice	28.

See footnotes at end of table.

TABLE 6--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2004¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Lime ³	Zakłady Przemysłu Wapienniczego Trzuskawica Slaskie Zakłady Przemysłu Wapienniczego Opolwapi S.A. Zakłady Przemysłu Wapienniczego Bukowa Kombinat Cementowo-Wapienniczy Kujawy S.A. Zakłady Cementowo-Wapiennicze Gorazdze S.A. Zakłady Cementowo-Wapiennicze Nowiny Produkcyjno-Handlowo-Usługowe Wapmo-Sabinow Wojcieszowskie Zakłady Przemysłu Wapienniczego Sp. z o.o. Zakłady Przemysłu Wapienniczego w Sulejowie Zakład Wapienniczy w Plazie	Kieleckie County, Swietokrzyskie Mountains Opole County Kieleckie County, Swietokrzyskie Mountains Bydgoskie County Opole County Kieleckie County Czestochowa County Jeleniogorskie County Piotrkowskie County Katowickie County	4,500.
Natural gas	million cubic meters	Ministry of Mining and Energy Gasfields at pre-Carpathian foothills Carpathian Mountains Lowlands, near Ostrow Wielkopolski, Poznan, and Trzebnica, north of Wroclaw	4,900.
Nitrogen:			2,400.
Ammonia (NH ₃)	Zakłady Azotowe "Pulawy" S.A. Zakłady Azotowe "Kedzierzyn" S.A. Zakłady Azotowe "Wloclawek" S.A. Zakłady Azotowe S.A. w Tarnowie Zakłady Azotowe S.A. w Chorzowie Zakłady Chemiczne "Police"	Pulawy in eastern Poland Kedzierzyn in Upper Silesia Wloclawek in central Poland Tarnow in southern Poland Chorzow in Upper Silesia Police in northwest Poland	
Fertilizer (N)	do.	do.	1,700.
Petroleum:			
Crude	Polskie Gornictwo Naftowe i Gazownictwo Warszawa Predsiębiorstwo Poszukiwan i	Oilfields in northern and northwestern lowlands; sub-Carpathian region and Carpathian Mountains	200.
Do.	Eksploatacji Ropy i Gazu "Petrobaltic"	Baltic Sea Shelf	100.
Refined	Petrochimia-Plock Rafineria "Gdansk" Rafineria "Czechowice" Rafineria "Trzebinia" Rafineria "Glimar" Gorilice Rafineria "Jedlicze" Podkarpackie Zakłady Rafineryjne w Jasle	Plock in central Poland Gdansk in northern Poland Czechowice in southern Poland Trzebinia in southern Poland Gorilice in southern Poland Jedlicze in southern Poland Jaslo in southern Poland	13,500.
Salt, all types	Inowroclawskie Kopalnie Soli S.A. Kopalnia Soli "Kłodawa" Kopalnia Soli "Wieliczka" Kopalnia Soli "Bochnia" KGHM "Polska Miedz" S.A. Kopalnia Węgla Kamiennego "Debiensko" Janikowskie Zakłady Sodowe "Janikosoda" S.A.	Gora, Mogilno I, and Mogilno II mines at Inowroclaw in central Poland Kłodawa in central Poland Wieliczka in southern Poland, near Krakow, mining deposits at Barycz and Wieliczka Southern Poland, mines at the Lezkowice and Siedlec-Moszczenica-Lapczyca deposit. Not known to have operated in 1999 Sieroszowice in southwestern Poland Debiensko, Upper Silesia Janikowo in central Poland	6,500.

See footnotes at end of table.

TABLE 6--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2004¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Selenium	Huta Metali Niezelaznych 'Szopienice" KGHM "Polska Miedz" S.A.	Katowice Refinery at Glogow	80.
Silver	KGHM "Polska Miedz" S.A. Zaklady Metalurgiczne Trzebinia	Refined from dore produced by the Szopienice Pb-Zn smelter-refinery largely from KGHM-supplied slimes	1.
Steel:			14,000 (crude).
Crude and semimanufactures	Huta Katowice S.A.	Plant at Dobrowa Gornicza, producing pig iron, crude steel, hot-rolled products, and cast steel	
	Huta im. T. Sendzimir S.A.	Steelworks at Krakow, producing pig iron, crude steel, hot-rolled products, cold-rolled products, pipes, and cast iron	
	P.P. Huta "Zawierciu"	Steelworks at Zawierciu, producing crude steel, hot-rolled products, cast iron, and cast steel	
	Huta Czestochowa S.A.	Steelworks at Czestochowa, producing pig iron, crude steel, hot-rolled sheets, pipes, and cast iron	
	Huta "Ostrowiec" S.A.	Steelworks at Ostrowiec-Swietokrzyski, producing crude steel, hot-rolled products	
	P.P. Huta "Labedy"	Steelworks at Gliwice, producing crude steel, and hot-rolled products	
	Huta "Lucchini-Warszawa" Sp. z o.o.	Steelworks in Warsaw, producing crude steel, hot-rolled products, and cold-rolled strip	
	Huta Florian S.A.	Steelworks in Swietochlowicach, producing crude steel, hot-rolled products, galvanized sheet, and cold-rolled strip	
	Huta "Stalowa Wola" S.A.	Steelworks at Stalowa Wola, producing crude steel	
	Huta "Jednosc" S.A.	Steelworks at Siemianowice Slaskie, producing crude steel, hot-rolled products, and pipes	
	Huta "Batory" S.A.	Steelworks at Chorzow, producing crude steel, hot-rolled products, and pipes	
	P.P.Huta "Baildon"	Steelworks in Katowice, producing crude steel, hot-rolled products, cold-rolled strip, and cast steel	
	Huta "Malapanew" S.A.	Steelworks at Ozimek, producing crude steel and cast steel	
	Huta "Zabrze" S.A.	Steelworks at Zabrze, producing crude steel, cast iron, and cast steel	
	Huta "Zygmunt" S.A.	Steelworks at Bytom, producing crude steel, cast iron, and crude steel	
Semimanufactures only	Huta Cedler S.A.	Steelworks in Sosnowiec, producing hot-rolled products, cold-rolled strip, and cast iron	
	P.P. Huta "Kosciuszko"	Steelworks at Chorzow, producing hot-rolled products	
	Huta "Pokoj" S.A.	Steelworks at Ruda Slaska, producing hot- rolled products	
	Huta "Andrzej" S.A.	Steelworks at Zawadskie, producing pipes	
	Huta "Ferrum" S.A.	Steelworks in Katowice, producing pipes	
	P.P. Huta "Bobrek"	Steelworks in Bytom, producing pig iron, hot- rolled products, and cast iron	
	Huta "Buczek" S.A.	Steelworks in Sosnowiec, producing pipes and cast iron	
	P.P. Huta "1 Maja"	Steelworks in Gliwice, producing hot-rolled products	
	Zaklad Wielkopiecowy "Szczecin" Sp. z o.o.	Steelworks at Szczecin, producing pig iron	

See footnotes at end of table.

TABLE 6--Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2004¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Sulfur	P.P.Kopalne i Zakłady Przetwórcze Siarki "Siarkopol"	Operations at Tarnobrzeg, mining the Jezioro- Grebów-Wydza deposit.	5,700.
Do.	P.P. Kopalnie i Zakłady Chemiczne Siarki "Siarkopol"	Operations at Grzybów, mining the Osiek and Grzybów-Gacki deposits.	NA.

¹The data presented in this table were compiled, in large measure, from information provided in the Minerals Yearbook of Poland (Bilans Gospodarki Surowcami Mineralnymi w Polsce Na Tle Gospodarki Światowej 1995) prepared and published by the Department of Mineral and Energy Policy, Mineral and Energy Economy Research Centre of the Academy of Science of Poland, The Ministry of Environmental Protection, Natural Resources, and Forestry. Additionally, very valuable information and criticism was provided by Mr. Krystof Galos and other members of his academic department.

²The production of barite at the "Boguszów" Barite Mine was stopped in 1997 because of large-scale area flooding and its future status is uncertain.

³In order of size.

TABLE 7
POLAND: RESOURCES OF MAJOR MINERALS IN 2004

(Million metric tons unless otherwise specified)

Commodity	Number of deposits		Geologically documented resources		
	Total	Exploited	Total	Exploited	Annual percentage change of total
METALS					
Copper	15	5	2,031	1,356	-13.2
Lead and zinc	21	3	174	35	-1
INDUSTRIAL MINERALS					
Raw materials for chemicals:					
Sulfur, native	17	5	469	38	--
Rock salt	19	5	80,188	11,200	-26.9
Barite	5	--	6	--	--
Potassium-magnesium salts	5	1	669	72	--
Raw materials for construction:					
Chalk	197	58	198	27	1
Clay:					
Argillaceous material for construction ceramics	1,212	342	3,975	572	-2.0
Bentonite	8	1	2.7	0.5	--
Ceramic clays	28	5	141	10	--
Refractory clays	17	3	56	5	--
Kaolin	14	2	215	83	--
Dolomites	11	4	347	158	-1.0
Feldspar ore	7	2	87	11.3	--
Gypsum and anhydrite	15	4	261	115	-1
Magnesite	6	1	13.3	3	-1
Sand and gravel:					
Filling sand	32	10	4,600	1,173	--
Moulding sand	78	12	350	116	-1
Quartz sand for brick and concrete	160	46	724	142	--
Gravel aggregates	5,118	1,893	14,637	3,302	1.0
Silica:					
Glass sand	30	7	601	134	--
Quartz, veined	7	3	7	5	--
Quartzite, refractory	19	1	15	8	--
Stone:					
Stone for construction and road use	556	227	8,202	3,875	--
Limestone and marl for lime and cement use	177	38	18,029	6,063	--
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous	133	48	42,579	16,041	1.0
Lignite	76	10	13,635	1,789	--
Gas: billion cubic meters					
Natural	do.	256	154	128	1.2
Coal methane	do.	44	85	17	--
Petroleum	86	69	20	18	28

-- Zero.

Sources: Central Statistical Office of Poland, 2005, Statistical Yearbook of Industry; Polish Academy of Sciences, 2004, Minerals Yearbook of Poland; Concise Statistical Yearbook of Poland.

TABLE 8
POLAND: IMPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	2000	2001	2002	2003	2004
METALS					
Aluminum and articles thereof	303	310	374	354	520
Chromite	29	26	9	11	NA
Cobalt, matte, oxide, and scrap	metric tons	79	86	71	88
Iron ore and concentrate	9,737	7,709	6,957	8,950	10,932
Lead:					
Concentrates, Pb content	--	4	5	2	--
Refined	14	12	21	32	33
Manganese, ore and concentrate	39	44	15	10	NA
Steel:					
Flat-rolled, nonalloy semimanufactures	1,897	2,535	2,357	NA	2,862
Stainless and articles thereof	79	84	91	NA	144
Pipes and hollow profiles	259	289	344	NA	415
INDUSTRIAL MINERALS					
Alumina	151	135	123	146	NA
Barite	7	7	6	8	NA
Bauxite	27	38	50	69	NA
Bentonite	62	65	68	94	NA
Cement:					
Clinker	606	251	67	70	NA
Cement, hydraulic	340	347	654	719	NA
Feldspar	82	144	168	155	NA
Flourspar	5	5	6	5	NA
Glass	429	466	549	534	707
Graphite, natural and synthetic	43	55	61	63	NA
Gypsum and anhydrite	78	23	46	104	NA
Kaolin, washed	48	61	70	72	NA
Mineral fertilizers	1,288	1,426	1,609	1,875	1,999
MINERAL FUELS AND RELATED MATERIALS					
Coal, including briquettes	1503	1,903	2,768	2,560	2,335
Natural gas	million cubic meters	7,676	8,325	7,775	8,721
Petroleum:					
Crude	18,002	17,513	17,872	17,448	17,309
Refined	1,797	2,318	2,501	2,039	3,155

NA Not available. -- Zero.

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2003 and 2005; Polish Academy of Sciences, Minerals Yearbook of Poland, 1999-2003.

TABLE 9
POLAND: EXPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	2000	2001	2002	2003	2004
METALS					
Aluminum and articles thereof	216	230	264	319	332
Cadmium metric tons	--	198	49	428	NA
Cobalt, matte, oxide, and scrap do.	22	14	1	--	NA
Copper:					
Refined copper and copper alloys	284	233	288	277	282
Copper manufactures	149	143	123	121	177
Lead:					
Concentrates, Pb content	45	56	58	52	54
Metal, refined	9	10	21	32	27
Silver and articles thereof metric tons	1,042	1,094	1,135	1,254	683
Steel:					
Pig iron	138	41	3	16	NA
Steel, crude	--	2	3	3	NA
Flat-rolled, nonalloy semimanufactures	2,185	2,219	2,151	NA	2,694
Pipes and hollow profiles	178	202	35	NA	184
Zinc:					
Concentrate, Zn content	12	16	34	35	25
Metal and articles thereof	87	92	89	80	82
INDUSTRIAL MINERALS					
Cement, hydraulic	978	897	478	264	359
Glass	598	682	662	697	803
Salt	427	376	343	423	NA
Sulfur	1,024	774	600	534	NA
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite and bituminous	23,247	23,032	22,626	20,128	19,700
Lignite	9	15	42	37	NA
Coke and semicoke	3,690	3,924	4,226	5,267	5,258
Petroleum, refined	2,154	2,523	2,446	1,389	NA

NA Not available. -- Zero.

Sources: Minerals Yearbook of Poland, 1999-2003; Central Statistical Office of Poland, Yearbook of Foreign Trade, 2003 and 2005.

TABLE 10
SLOVAKIA: PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Thousand metric tons unless otherwise specified)

Commodity		2000	2001	2002	2003	2004
METALS						
Aluminum:						
Alumina	metric tons	109,813	110,078	111,618	132,089	156,893
Aluminum ingot, primary	do.	136,753	133,672	146,958	165,290	175,000 ^e
Copper:						
Mine output, concentrate, Cu content	do.	11	6	2	2 ^e	2 ^e
Metal, refined, primary and secondary ^e	do.	--	8,000	8,100	5,800 ³	--
Gallium, metal ^e	kilograms	500	500	500	500	500
Gold, metal	do.	306	157	53	50	50 ^e
Iron and steel:						
Iron ore:						
Gross weight		909	888	1,300	1,324	1,000
Metal content		255	238	175	200	500
Concentrate, gross weight		447	435	326	400	300
Metal:						
Pig iron		3,166	3,255	3,533	3,892 ^r	3,800
Ferroalloys, total electric furnace ^{e,4}		95	95	95	95	95
Ferrochromium	metric tons	17,702	5,968	5,695	1,924	2,000
Ferrosilicon ^e	do.	50,000	50,000	50,000	50,000	50,000
Steel, crude		3,733	3,989	4,275	4,709 ^r	4,564
Semimanufactures ^e		3,500	3,600	3,500	3,500	3,500
INDUSTRIAL MINERALS						
Barite, concentrate	metric tons	13,700	14,450	25,820	10,000	10,000 ^e
Cement, hydraulic		3,045	3,123	3,141	3,147	3,158
Clays:						
Bentonite	metric tons	66,528	82,915	66,128	74,938	69,252
Kaolin	do.	32,000	34,700	33,000	35,000	35,000 ^e
Refractory	do.	2,000	3,000	3,000 ^e	-- ^r	--
Ceramic	do.	61,000	59,000	55,000	50,000	50,000 ^e
Diamond, synthetic ^e	carats	5,000	--	--	-- ³	-- ³
Dolomite		1,176	1,471	1,357	1,250	1,117
Gypsum and anhydrite, crude	metric tons	124,000	169,000	121,700	125,000	--
Lime, hydrated and quicklime		754	816	911	847	961
Magnesite, concentrate	metric tons	1,001,000	961,000	930,000	397,259	404,776
Nitrogen, N content of ammonia	do.	215,000	209,000	326,000	230,200	220,003
Perlite	do.	17,020	14,910	18,630	19,000	19,000 ^e
Salt	do.	121,700	123,000	97,400	95,000	95,000 ^e
Sand and gravel	thousand cubic meters	1,271	1,272	1,399	1,300	1,300 ^e
Stone:						
Limestone and other calcareous stones for cement		6,700	3,596	3,694	3,453	4,501
Crushed stone	thousand cubic meters	2,868	4,602	4,715	5,075	4,472
Talc	metric tons	1,800	2,600	2,290	1,000	1,000
Zeolites	do.	15,000	23,000	28,000	25,000	--
MINERAL FUELS AND RELATED MATERIALS						
Coal, brown and lignite		3,589	3,424	3,401	3,077	2,952
Coke:^e						
Metallurgical		1,500	1,500	1,500	1,500	1,500
Unspecified		200	200	200	200	200
Gas, manufactured, coke oven	million cubic meters	202	213 ^r	206 ^r	210 ^r	200
Petroleum:						
Crude:						
As reported		60	54	53	48	50
Converted ^e	thousand 42-gallon barrels	400	400	400	350	350
Refinery products ^e	do.	40,000	40,000	40,000	40,000	44,500

^eEstimated; estimated data are rounded to no more than three significant digits. ^rRevised. -- Zero.

¹Table includes data available through January 2006.

²In addition to the commodities listed, arsenic, diatomite, feldspar, illite, sodium compounds, sulfur, and sulfuric acid are produced, but available information is inadequate to make reliable estimates of output levels.

³Reported figure.

⁴May include some FeCrSi and FeNi, if any was produced.

TABLE 11
SLOVAKIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies ¹	Location of main facilities ²	Annual capacity
Aluminum	ZSNP Aluminum Works (Slovalco)	Ziar and Hronom, central Slovakia	108
Antimony:			
Ore	Liptovska Dubrava	Central Slovakia	50
Do.	Pezinok	Western Slovakia	50
Smelter	Vajskova	Central Slovakia	2
Cement	Lietavska Lucka, Stupava, and Turna	Slovakia	5,400
Coal:			
Brown	Hornonitranske Bane, a.s.	Prievidza, central Slovakia	3,500
Do.	Bana Dolina, a.s.	V'lký Krtis, southern Slovakia	500
Lignite	Bana Zhorie, a.s.	Holic, Western Slovakia	400
Copper:			
Ore	Slovinky, Hodrusa-Hamre, and Rudnany	Central Slovakia	500
Refinery	Krompachy	do.	27
Gallium kilograms	ZSNP Aluminum Works	Ziar and Hronom, central Slovakia	4,000
Iron:			
Ore	Nizana Slana and Rudnany	Central Slovakia	1,600
Concentrate	do.	do.	1,300
Lead-zinc, ore	Banska Stiavnica	do.	200
Magnesite	SMZ a.s. Jelsava	Eastern Slovakia	350
Do.	Slovmag a.s., Lubenik	Central Slovakia	150
Petroleum, refinery	Bratislava, Dubova	Slovakia	NA
Salt	Solivar a.s., Presov	Eastern Slovakia	150
Steel, crude	U.S. Steel Kosice	Eastern Slovakia, Kosice	4,000
Do.	Zeleziarne Podbrezova a.s.	Slovakia, Podbrezova	600

NA Not available.

¹All mining companies are Government owned.

²Names and locations of mines and crude oil refineries are identical.